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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,562	06/16/2005	Rudolf Bahnen	LYBZ2 00088	5128
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FAY SHARPE LLP 1100 SUPERIOR AVENUE, SEVENTH FLOOR CLEVELAND, OH 44114			EXAMINER LEY, FRANCISCO M	
			ART UNIT 3746	PAPER NUMBER
			MAIL DATE 08/24/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/516,562

Applicant(s)

BAHNEN, RUDOLF

Examiner

Francisco M. Ley

Art Unit

3709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/29/2004.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

Specification

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and *should not compare the invention with the prior art*.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. The abstract of the disclosure is objected to because of the discussion of the prior art. The portions discussing asynchronous motors being typical of most prior two-shaft vacuum pumps should be removed from the abstract. Furthermore, the last sentence containing the phrase, "eliminated either", should probably be changed to "eliminated". Correction is required. See MPEP § 608.01(b).

3. The disclosure filed on 6/16/2005 is objected to because of the following informalities:

- a. Page 2, Line 14: "are eliminated either" should probably recite, "are eliminated".
- b. Page 3, Line 18: "because due the torque" should probably be changed to recite, "due to the torque".

Appropriate correction is required.

Claim Objections

4. Claim 9 is objected to because of the following informalities:

Claim 9: the phrase which recites, "a pump cover holding the can and a *stator casing surrounding the stator casing*" is unclear. Claim 9 should probably recite, "a pump cover holding the can and a *stator casing surrounding the motor stator*".

Claim 10: the phrase "permanent magnets of the rotor include" should recite, "permanent magnets of the ***motor*** rotor".

Claim 11: the phrase "magnetic field and an least one of" should probably recite, "magnetic field and ***at*** least one of".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claim 2 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "power-limiting *means*" whereas in claim 1 the limitation is stated as a "power-limitation *device*". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagayama et al. (U.S. Patent 5,816,782; Hereinafter, Nagayama) in view of Biais (U.S. Patent 5,793,178).

Claim 1: Nagayama discloses a vacuum pump having a pair of Roots rotor shafts 2 and an electric drive motor M, which drives one of the motor shafts 2a. Motor M is a synchronous (Column 6, Lines 2-3) motor that is excited by permanent magnets 5a and 5b (Column 4, Lines 5-17). Nagayama does not disclose a power-limiting device for the motor M. However, Biais discloses a synchronous permanent magnet electric motor that is controlled by a signal applied to an input 29 of a circuit 21 and

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limits motor power (P) as shown in Figure 4 to a fixed maximum motor power (horizontal line 40) in a limiting range above a fixed rated motor speed, shown as 2000 rpm (Column 4, Lines 38-43).

Claim 2: Biaisi discloses that the power-limiting means adjusts, in the limiting range, a phase angle between a magnetic field of the rotor and an electrical stator field to an angle other than 90 degrees. Phases 13, 14, and 15 are fed by undulator 11 with alternating currents of 120° phase difference to enable a rotation of the permanent magnet rotor (Column 3, Lines 22-27).

Claim 3: Biaisi discloses that in the limiting range, i.e. at increased speeds, the stator current must drop (Column 4, Lines 60-62).

Claims 4 and 11: Biaisi discloses that in the limiting range, adjustment is made of the phase angle between the magnetic field of the rotor and the stator current as a function of the motor speed (Column 4, Lines 63-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the pump of Nagayama et al. to include a power-limiting device for the motor as disclosed by Biaisi. This would allow the total inductance of the motor to be maximized (See Abstract of Biaisi) and thus also enable a substantial reduction of the heating (See Biaisi Column 5, Lines 65-66) of the motor rotor of Nagayama et al.

Claim 5: Nagayama discloses that the driven rotor shaft 2a driven by the drive motor M is of cantilevered configuration and is supported without a supporting bearing on a motor-side end, i.e. the same side of molded body 12.

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Claim 6: Nagayama shows in Figure 6 that the motor rotor comprises a plurality of permanent magnets 5a arranged on an outside surface of the motor rotor body (Column 4, Lines 42-45).

Claims 7 and 8: Nagayama discloses a rotor enclosure or can 7 which may be nonmetallic, i.e. made of a synthetic resin (Column 3, Line 54), and externally encloses the motor rotor body and the plurality of permanent magnets 5a (Figure 6). The can 7 serves as a vacuum container and provides a gas-tight seal with respect to the motor stator (Column 3, Lines 57-61).

Claim 9: Nagayama discloses a pump cover 9 holding the can 7 and a stator casing 12 surrounding the stator 12 are integrally formed (Column 4, Lines 18-21).

Claim 10: Nagayama and Biais do not disclose specifically that the permanent magnets of the rotor include rare earth elements. However, Biais does suggest the use of rare earth elements by stating that, *"This diminution of the heating is a major advantage, notably when temperature-sensitive magnets are used, such as rare-earth magnets"* (Column 6, Lines 11-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include permanent magnets of rare-earth elements based on Biais, and also because it would be well known that permanent magnets tend to be stronger with rare earth elements.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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U.S. Patent 4,818,890 discloses a power controller for an inductor motor capable of detecting rotor speed and adjusting phase angle in accordance.

U.S. Patent 6,577,035 discloses a can of non-metallic material surrounding the permanent magnets of a motor rotor.

U.S. Patent 4,312,628 discloses a vacuum pump having permanent magnets of rare earth elements attached to the outer surface of a motor rotor.

U.S. Patent 2,937,807 discloses a two-shaft vacuum pump with a cantilevered drive motor supported without a bearing on a motor-side end.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Francisco M. Ley whose telephone number is (571) 270-1299. The examiner can normally be reached on Monday-Friday, 8:30am-6:00pm, Alt Fridays, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Stashick can be reached at (571) 272-4561. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call (800) 786-9199 (IN USA OR CANADA) or (571) 272-1000.

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